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ABSTRACT

This report gives updated information on two literacy programs sponsored by the International Business Machines Corporation (IBM). The report is in two sections. The first section briefly summarizes findings from studies around the United States of "Writing to Read," (WTR), the K-1 reading/writing program developed by John Henry Martin. This section provides brief reports of studies of WRT conducted in Florida, Pennsylvania, Connecticut, New Jersey, Texas, Ohio, and New York. The second section presents summarized results of studies of IBM's Principle of the Alphabet Literacy System (PALS), a program designed to teach adolescents and adults who read below a sixth-grade level to read and write using a touch screen and interactive videodisc technology. Studies in this section are reported from British Columbia, Mississippi, Louisiana, Georgia, Minnesota, Indiana, Michigan, Ohio, Arizona, Texas, California, and New York. Ten tables of data are included. (SR)

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Writing to Read® and Principle of the Alphabet Literacy System Outcomes: The Latest

May 1989

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MORE OUTCOMES
IBM Literacy Programs

Writing to Read*

Writing to Read students continue to show progress...

The number of students using **Writing to Read***, the K-1 reading/writing program developed by Dr. John Henry Martin, continues to grow with over 5,000 schools having installed the program. An estimated 2 million kindergarten and first grade students have been touched by Writing to Read. During 1989, Writing to Read is celebrating its fifth birthday. And, as is appropriate for any birthday celebration, students throughout the country are joining hands to say "Thank you" for helping them begin their school careers with reading and writing scores which surpass those of their non-Writing to Read counterparts.

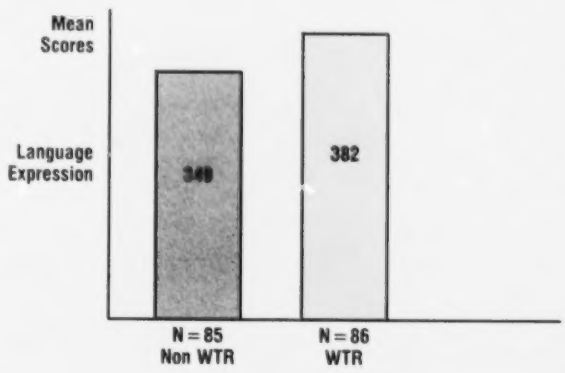
Results from around the country continue to confirm the initial results from the Educational Testing Service pilot study. As educators become more interested in students' abilities to express themselves in writing, the most consistent concern expressed has been the ability of young children to begin the process of writing with a positive attitude. Reports from **teachers** and **parents** of students using Writing to Read indicate that students having had Writing to Read are writing with **fluency** and **enjoyment**. Results from reading tests show that in addition to an increase in writing growth, writing is an avenue to reading.

SOUTHEAST... Florida...

Writing to Read has been used with kindergarten students for three years. When tested using the National Test of Basic Skills (NTBS), second grade students having had Writing to Read (WTR) performed better than their non-Writing to Read peers in each of the reading areas assessed. On the subtest measuring word attack skills, WTR student scores were higher ($p<.08$) than the non-WTR student scores. This means one can be 92% confident that the difference obtained is not attributable to chance. Second grade students who were WTR graduates had better performances on vocabulary, comprehension, and total reading achievement than non-WTR students.

When tested on spelling, second grade students who had participated in WTR were able to spell as well as students who had not participated in WTR. In language expression, WTR students scored significantly higher than non-WTR students. In fact, score differences were significant at the $p<.01$ level. This means one can be 99% confident this difference is not attributable to chance (Figure 1).

Figure 1. National Test of Basic Skills



Writing samples were collected from second grade students in the original WTR pilot schools and three control or non-WTR schools. The level of writing was identified for each student. WTR students wrote significantly better than non-WTR students when their writing samples were compared.

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In another Florida school system, a pilot study done in 1986-87 with kindergarten students in four elementary schools produced student outcomes which strongly favored Writing to Read. Performance for WTR students was at a significantly higher level on writing samples and a test of reading achievement. WTR students performed better on vocabulary knowledge and total prereading skills than the non-WTR students. Male kindergarten students demonstrated the most significant and consistent increases in reading achievement and writing abilities.

WTR students were followed through first grade and comparisons were made between their progress and the progress of a group of non-WTR students. Children who had WTR were placed at a **consistently higher reading level** at the beginning of first grade than students who had been enrolled in a regular kindergarten program. At the end of first grade, seventy-two percent of the WTR students were placed in level 10 of the basal series while only forty-five percent of the non-WTR students had progressed to that level.

When compared, low-SES students having had WTR were almost one level above their non-WTR peers. At the end of first grade, males in WTR placed more than one-half a level above males who did not participate in WTR. For both males and females having had WTR, level placement was significantly higher ($p<.001$) than the level of placement for non-WTR students.

Results of the Comprehensive Tests of Basic Skills (CTBS) show WTR students at the end of first grade achieved significantly higher reading levels than a non-WTR comparison group. WTR graduates performed better on vocabulary, comprehension, and total reading.

NORTHEAST... Pennsylvania...

In a mid-sized school district in the northeast, **Writing to Read** graduates were followed over a period of **four years**. Prior to WTR, kindergarten students tested with the Stanford Achievement Test scored at the 44th percentile. After WTR and at the end of the first grade, these same students scored at the 71st percentile. This gain was continued into the second grade where the students scored at the 71st percentile. In the third grade they scored at the 64th percentile, which was higher than any of the previous five years reported (Figure 2a).

In the same school district, prior to WTR, a majority of the kindergarten students scored in the first and second quartiles on the Stanford Early School Achievement Test. After WTR this figure was reversed with the majority of students scoring in the third and fourth quartiles (Figure 2b).

Figure 2a. Stanford Achievement Test

Grade Level Median Percentile Comparison

TOTAL READING

		K	1	2	3
Before WTR	May, 1983		60	59	49
	May, 1984		60	64	54
	May, 1985	44	67	64	53.5
After WTR	May, 1986	64	71	68	57
	May, 1987	64	77	71	56
	May, 1988	72	73	75	64

Figure 2b. Stanford Early School Achievement Test

Comparison of Score Distribution

KINDERGARTEN – TOTAL READING

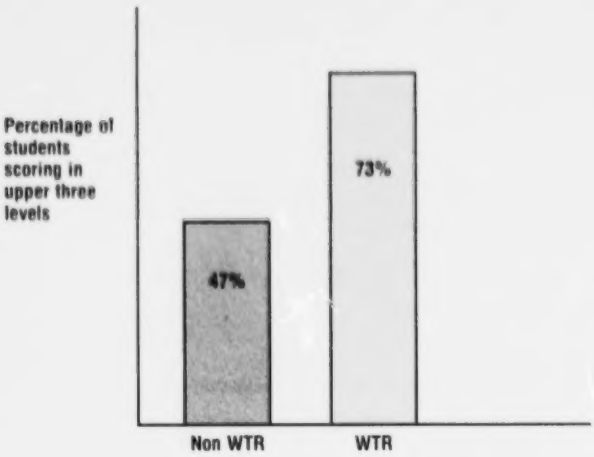
	Percentage of Students in First Quartile	Percentage of Students in Second Quartile	Percentage of Students in Third Quartile	Percentage of Students in Fourth Quartile	Number Tested
May 1985	13.6%	50.9%	31.8%	3.7%	220
			35.5%		
May 1986	6.8%	20.7%	44.6%	27.9%	280
			72.5%		
May 1987	8.1%	15.8%	46.9%	29.2%	260
			76.1%		
May 1988	5.0%	14.9%	37.3%	42.7%	241
			80.0%		

NORTHEAST... Connecticut...

In a northeastern school district, first grade students in WTR were compared with a control group not having WTR. Comparisons were made in writing and spelling. WTR students were shown to achieve greater growth in the area of writing than did the control group. When tested in October before WTR, the number of students writing at the pre-writing level were about the same in both schools. In May, however, the number of WTR students advancing to the upper three levels of the writing scale was greater (73%) than the number of non-WTR students (47%). In the area of spelling, WTR students were shown to score significantly higher than non-WTR students (Figure 3).

Teachers, in response to a questionnaire, rated the program as "**very effective**." Their responses showed the program was very effective with above-average, average, and below average students. Outcomes of WTR which are not evident from standardized

Figure 3. Writing Assessment

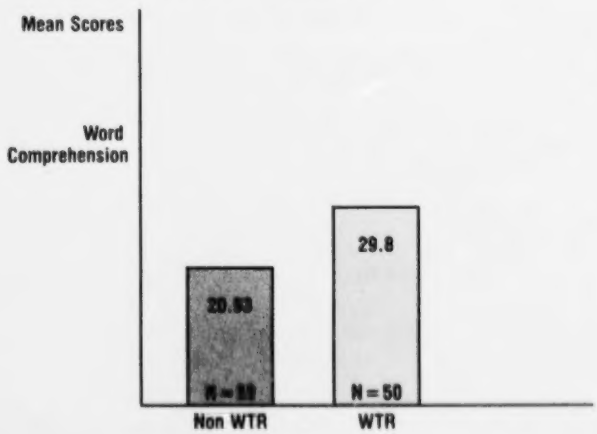


measures include the checking out of more library books, students being more willing to write, and an increased quantity of writing. Teachers also reported students were performing better in other subject areas and activities as a result of the skills they acquired in WTR.

NORTHEAST... New Jersey...

In a middle class, suburban school located in the Northeast, the Metropolitan Readiness Test was used as a pre- and post-test measure for kindergarten students. Results showed the WTR students having significantly higher scores than the non-WTR students. Teachers report that students loved to go to the lab each day. They shared with everyone who would stop and listen. During the process the students grew in **self-concept** and **independence**. When these kindergarten students started first grade, their teachers reported they had never had students as advanced as these were.

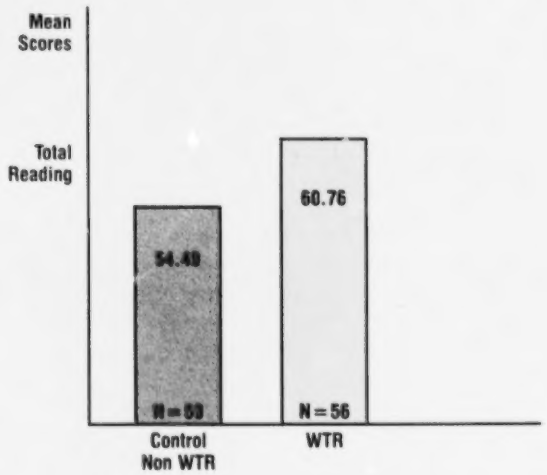
Figure 4a. Woodcock Reading Mastery Test



SOUTHWEST... Texas...

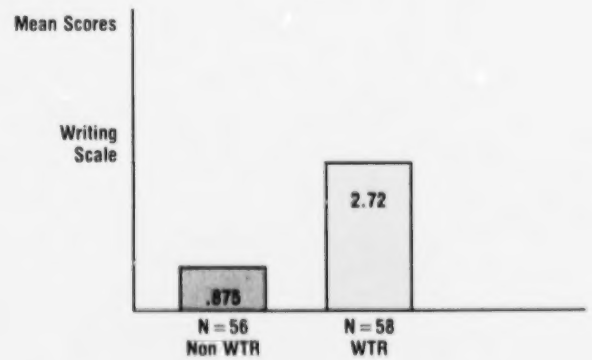
The Woodcock Reading Mastery Test was used to measure kindergarten students in matched schools who were in a pilot program (WTR) versus students in a regular academic program. WTR students were found to achieve a statistically significant ($p<.05$) higher performance on the Word Comprehension subtest of the Woodcock Reading Mastery Test than Non-WTR students (Figure 4a). Likewise, WTR students, on the average, performed better on the Word Identification subtest and the Total Reading Score than did non-WTR students (Figure 4b).

Figure 4b. Woodcock Reading Mastery Test



Student performance on a holistically-scored informal writing assessment was significantly higher ($p<.001$) for students having had WTR than for non-WTR students (Figure 4c).

Figure 4c. Informal Writing Assessment



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In another Texas school district, after two six-week sessions of Writing to Read, kindergarten students outscored students from the previous three years by as much as 20 percentile points on the SRA reading test (Figure 5). First graders scoring at the lower level in reading were also placed in Writing to Read and were brought up to grade level.

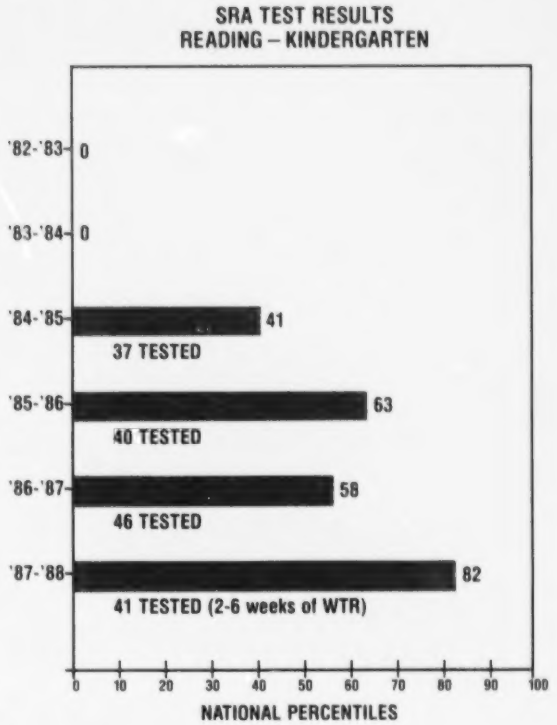
MIDWEST... Ohio...

In the spring of 1988, as part of a formative evaluation study of Writing to Read, a group of students who participated in WTR during the 1986-87 school year and a group of students who had not participated in the program were compared on several measures. These children were evaluated on reading achievement using the Comprehensive Test of Basic Skills (CTBS). An analysis of the second grade CTBS results comparing the students who had WTR in the first grade versus the students who had not had WTR showed that the differences between these two groups when the cognitive skills index (ability) was held constant were statistically significant. The WTR group scored higher on the Word Attack, Vocabulary, Reading Comprehension, Spelling, Language Mechanics, and Language Expression subtests.

Writing samples were collected from WTR and non-WTR first grade students during the 1986-87 school year. In 1987-88 students in the first grade were given a competency based writing sample assessment. In all cases there were significantly higher scores for the WTR group than the non-WTR group for ratings of the samples and the number of words per sample.

Students, in general, responded that they liked the different stations in the WTR room. They **particularly liked using the word processor**, the writing table, the computer station, and the make words station. Parents expressed the opinion that WTR should become a **permanent program** in their district. Ninety percent of the parents in 1986-87 and 94% of the parents in 1987-88 expressed this opinion based on observations of their children in the WTR program. Teachers felt that WTR helped the students produce **creative stories**, increased reading and writing vocabularies, and helped students see the **relationship** between reading and writing.

Figure 5



NORTHEAST... New York...

Kindergarten, pre-first, and first grade students participating in the WTR program were shown to achieve at higher levels in reading comprehension, language expression, and independent composition skills. Writing samples of first graders showed WTR students scoring higher on a nine-point scale than non-WTR students. In the pre-first grade classes, students were **composing independently** while in previous years more students had to dictate to the teacher. In kindergarten, more students advanced beyond the readiness level in the developmental reading program than in previous years. Teachers reported all students were writing more and using **interesting** and **unusual words**. Teachers have become very enthusiastic about students' learning and are displaying an increased understanding of developmental levels in writing. Parents have been actively involved in working with their children and the WTR program.

Principle of the Alphabet Literacy System

The **Principle of the Alphabet Literacy System,** known as **PALS,** was designed to teach adolescents and adults who read below a sixth grade level to read and write using a touch screen (InfoWindow*) and interactive videodisc technology. The **PAL* System,** also developed by Dr. John Henry Martin, is installed in over 400 sites across the country. PALS labs can now be found in high schools, middle schools, correctional institutions, adult and community education centers, and in work-place literacy programs for employees.

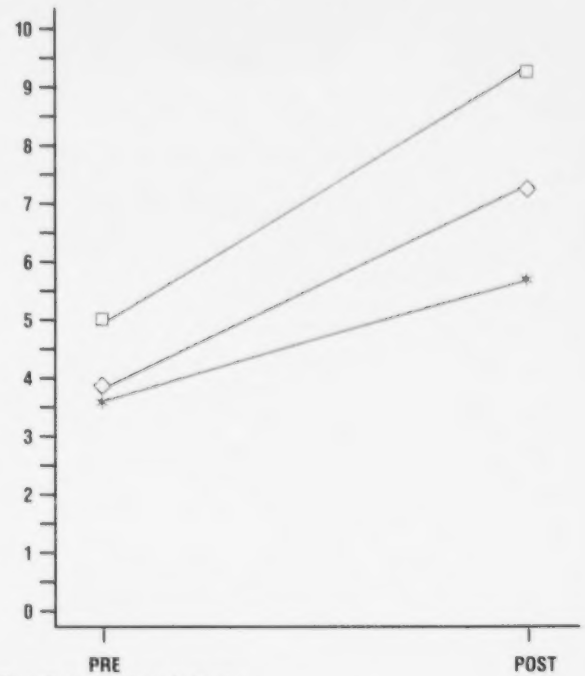
As the results from these first installations are compiled, students are demonstrating increases in reading and writing scores. They are also learning typing and word processing skills. Most encouraging, however, are the consistent reports of students' increases in self-esteem and acknowledgements of control over their own lives.

CANADA... British Columbia...

In September, 1988, **three** groups of adolescents and adults participated in a PALS pilot study. The classes included students who were immigrants, British Columbian native Indians, and Canadian born Caucasians. The results from the evaluation of the first phase of the pilot showed a 3.04 average grade level increase in reading as measured by the Woodcock Reading Mastery Test (Figure 6). Post-test scores of spelling ability, writing achievement, and typing skills were also statistically higher than pre-test scores for the three groups.

The Coopersmith Self-Esteem Inventory was administered to the students at the beginning of the program and at the time of program completion. A comparison of these scores indicate that a statistically significant change in self-concept occurred over the period of PALS instruction. The evaluators concluded that the PAL System formed a **core for successful adult literacy instruction**.

Figure 6. Reading Achievement (Woodcock Reading Mastery Scores)



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SOUTH... Mississippi...

Thirty-four students in an adult learning center, having completed the 100 hours of PALS and a pre-G.E.D. program, posted a mean gain of 1.9 grade levels when tested using the Slosson Oral Reading Test (SORT).

SOUTH... Louisiana...

Middle South Utilities (MSU) has established PALS labs in four locations throughout the South, including Monroe and New Orleans, Louisiana, Jackson, Mississippi, and Helena, Arkansas. The laboratories are part of the MSU New Opportunities program aimed at improving education and job opportunities in a four-state region. Hugh Nichols, director of economic development for MSU, reports that although the program is just a year old they've already seen **dramatic results**. Will Franklin, a PALS instructor, describes what has happened with one of his students. "She's shown tremendous progress in both her reading and writing, but more importantly in her feelings of self-worth. She has added a **new meaning** to her life. That's one of the added benefits of this program, one which can't be shown on paper, but one which is just as real as the academic advances."

SOUTH... Georgia...

In the pilot year (1987-88) of the PALS program at a large metropolitan area suburban high school, student gains were impressive. Reading scores of students in the experimental group improved 11.4 school months in a six-month time period (two quarters). Teachers reported that the students appeared to be **more confident**. In addition, the 52 students in the experimental group were **present in school** 491 **more** days than they had been in school the previous year while the 52 students in the control group were absent 28 days more than they had been absent the previous year.

MIDWEST... Minnesota...

Twenty-five adults enrolled in an adult education center using the PALS program were tested using the Gates-McGinitie Reading Test (Level C). They demonstrated an average increase of 2.86 grade levels in vocabulary. Their teacher reports that this gain is consistent with the gains demonstrated by other PALS students she has taught over the past two years.

MIDWEST... Indiana...

In Indiana, thirty-nine students completing PALS had a mean level increase of 2.2 grade levels when tested using the Adult Basic Learning Examination (ABLE). Their teacher also reported increased self-esteem on the part of her students.

MIDWEST... Michigan...

In the fall of 1987, 71 high school students in the Midwest were enrolled in 5 PALS classes. Students ranged in reading ability from 1.8 to 8.5 G.E. as tested using the Stanford Diagnostic Reading test. Class sizes varied from 12 to 16 students. Sixty-six students completed the program. On the post-test using the same test, student gains ranged from 1 to 4.6 G.E. with an average gain of 2.2 years G.E. Final writing samples showed students were able to express themselves with **clarity** using more varied sentences when compared to samples from the beginning of classes.

MIDWEST... Ohio...

After completing its first year with a PALS lab, a junior high school reported that their 8th and 9th grade special education students had **improved vastly in reading** and had enjoyed the PALS lab. They particularly liked learning to **touch type** and participating in Phase Three, the **personal writing** phase, of the program. There were 44 students who completed the course, 34 of whom were designated as learning disabled and 10 as developmentally handicapped.

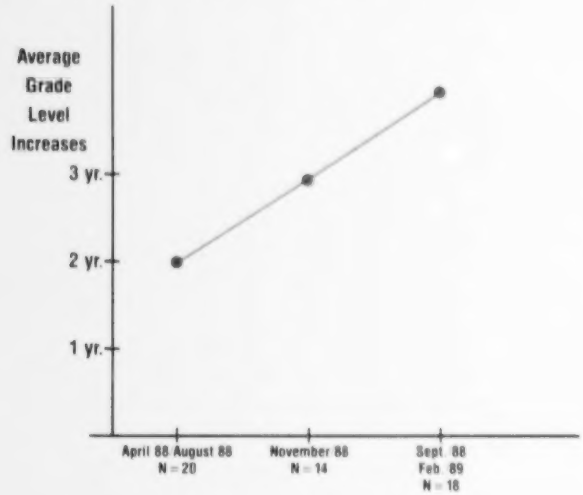
The students were evaluated using the Kaufmann Test of Educational Achievement (K-TEA) and their previous yearly gains in reading were compared to their PALS program gains. The mean gain in reading level for these students was 1.62 years. The gains made over the previous year for these students averaged .75 year. Their teacher also reported that many students demonstrated promising creative writing ability.

SOUTHWEST... Arizona...

For the first two PALS classes held at this site, twenty adolescent and adult students completed the program and showed an average of 2.0 years growth when tested using the Wide Range Achievement Test (WRAT). Students demonstrated an **increase in writing and reading skills**. Likewise, they exhibited

increased self-esteem. When the 3rd group of students completed the program in November, 1988, they showed a gain of 2.99 years on the WRAT. The fourth and most recent group of 18 students completed the program in February, 1989, with an average gain of 3.95 grade levels (Figure 7). The most recent group of students was given a pre and post self-esteem inventory, the Culture-Free-Self-Esteem Inventory (CFSEI), and 79% of the students showed a positive change in self-esteem.

Figure 7a. Wide Range Achievement Test



SOUTHWEST... Texas...

The PAL System was evaluated in conjunction with a project that was conducted by the Texas Center for Adult Literacy and Learning. The project involved the comparison of student progress related to several different programs for adult literacy instruction. Students selected for a combination Comprehensive Comptencies Program (CCP)/PALS program were all reading below a sixth grade level. The researchers described the program as an integrated teacher/technology teaching system allowing the students to learn with a **variety of methods** and with planned, **intense interaction** with the instructor. At the conclusion of the study it was determined the PAL System was a **most effective** system for reading instruction for the low, or beginning level students.

WEST... California...

Yolanda Weis, a PALS instructor in Long Beach, described what happened with her students as follows: "When using PALS, there were several reasons for my students' success. The primary reason seemed to be linked to the concept of 'touching' or keying the words. Students came to realize the only real competition was within themselves. The humiliation of performing in front of peers was removed; thus, the fear of failure was eliminated and replaced with **enthusiasm** and **motivation**. For ESL students, PALS was an effective method of teaching English and introducing students to computer technology."

NORTHEAST... New York...

Over 110 adults have been through the PALS program at one continuing education site. Most enter the program reading below a third-grade level. They attend night classes and typically take six months to complete the program. The average grade level in reading for those who have completed the program is 5.8. The most successful student to date has achieved a 7.0 grade level in reading.

In addition to the academic success the students have achieved, the director of the program reports the students have experienced a tremendous amount of **personal growth** – in self-esteem and occupational development. He also reports that the use of **paired learning**, which is an important part of the PAL System, has resulted in **new friendships** and in an increased desire for open learning. Participating in the program has helped students overcome the embarrassment they had previously felt about their inability to read. Graduates from the program have gone on to **continue** with adult education classes and have earned G.E.D. diplomas.